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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,587	07/03/2003	Abhijit G. Shanbhag	M-15227 US	7678

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EXAMINER	
WILLIAMS, LAWRENCE B	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/614,587	SHANBHAG ET AL.	
	Examiner	Art Unit	
	Lawrence B. Williams	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20 and 46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-16* is/are allowed.

6)☒ Claim(s) *17-20* is/are rejected.

7)☒ Claim(s) *46* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 17, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghosh (US Patent 6,011,813) in view of Xia et al. (US Patent 7,190,744 B2).

(1) With regard to claim 17, Ghosh discloses in Fig. 2, an equalizer comprising: means for receiving a first input signal (210) and providing an equalized output signal; means for receiving (280) the first input signal and providing tap coefficients to the means for providing the equalized output signal (col. 5, lines 47-50; col. 6, lines 4-6); a slicer (230) adapted to receive a slicer input signal (225) and provide a slicer output signal (175); means (280) for generating an error signal based on the slicer output signal; means (240) for generating a feedback signal (245), which is summed (220) with the equalized output signal (215) to generate the slicer input signal; and means (280) for generating a mean square error signal based on the error signal (col. 6, lines 4-25).

Ghosh et al. does not disclose means for generating an error signal based on a delayed version of the slicer input signal.

However, Xia et al. discloses in Fig. 9, error generation for adaptive equalizer wherein he discloses means (860) for generating an error signal based on a delayed version (Delay C) of the slicer input signal (col. 7, lines 29-33).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Xia et al. as a method of generating a more accurate error signal in the equalizer (col. 4, lines 64-67).

(2) With regard to claim 19, Ghosh also discloses in Fig(s). 4 and 5, the equalizer of claim 17, wherein the equalizer is employed to determine at least one of a bandwidth estimate, a channel identification estimate, a signal-to-noise ratio estimate, a chromatic dispersion estimate, and a polarization mode dispersion estimate for a communication channel associated with the equalizer. Ghosh discloses in Fig. 4, the equalizer employed to determine a signal-to-noise ratio (col. 8, lines 49-56) and in Fig. 5, a noise variance (col. 9, lines 36-44) for a channel associated with the equalizer.

3. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ghosh (US Patent 6,011,813) in combination with Xia et al. (US Patent 7,190,744 B2) as applied to claim 17 above, in view of Koyama (US 2002/0006160 A1) and further in view of Garret (US 2004/0001538 A1).

As noted above, the combination of Ghosh and Xia et al. disclose all limitations of claim 17, above. They do not disclose the equalizer of claim 17, further comprising means for storing the tap coefficients and the mean square error signal.

However, Koyama discloses an equalizer (Fig. 12) wherein he discloses means (Fig. 2, element 506) for storing the tap coefficients (pg. 6, paragraph [0068]).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Koyama to incorporate a method of updating tap coefficients, which would reduce power consumption.

Neither of the cited references teaches means for storing the mean square error signal. However, Garret discloses an equalizer wherein he teaches means (Fig. 5, element 58) for storing a mean square error signal (pg. 3, paragraph [0031]).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Garret as a method of implementing a faster error convergence within the equalizer (pg. 1, paragraphs [0005-006]).

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ghosh (US Patent 6,011,813) in view of Xia (US Patent 7,190,744 B2) as applied to claim 17 above, in view of Nedic et al. (US Patent 6,563,841 B1).

As noted above, the combination of Ghosh and Xia et al. disclose all limitations of claim 17, above. Furthermore, Ghosh discloses the equalizer with least mean square adaptation (col. 6, lines 4-25) to provide continuous time adaptation for a communication channel.

Ghosh nor Xia et al. teach the equalizer a fractionally-spaced transversal filter with decision feedback and a least mean square-based adaptation and to provide a continuous time adaptation.

However, Nedic et al. teaches in Fig. 6, a fractionally-spaced transversal filter with decision feedback (col. 10, line 57-col. 11, line 21) and a least mean square-based adaptation (col. 10, lines 3-7) to provide a continuous time adaptation.

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the teachings of Nedic et al. as an improved method of adaptively compensating for time variations in the communication channel (col. 3, lines 43-51).

Allowable Subject Matter

5. Claims 1-16 are allowed.

6. Claim 46 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammad can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams

lbw
August 9, 2007

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER